



SUBSTITUTE for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		<i>Complete if Known</i>			
		Application Number	09/912,434		
		Filing Date	July 24, 2001		
		First Named Inventor	Donald Nelson		
		Group Art Unit	2672		
Examiner Name	Chante E. Harrison	RECEIVED SEP 17 2003			
Attorney Docket Number	IMMR058/00US				
Sheet	2	of	3		

Technology Center 2600

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY
		Office ¹	Number ²	Kind Code ³ (if known)		

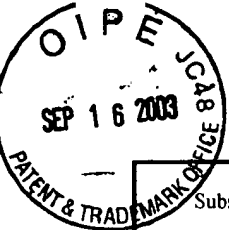
OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS				
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.		
CU	C1	Baigrie, "Electric Control Loading - A Low Cost, High Performance Alternative," <i>Proceedings of Interservice/Industry Training Systems Conference</i> , pp. 247-254, November 6-8, 1990		
CU	C2	Iwata, "Pen-based Haptic Virtual Environment," 0-7803-1363-1/93 IEEE, pp. 287-292, 1993		
CU	C3	Russo, "The Design and Implementation of a Three Degree of Freedom Force Output Joystick," <i>MIT Libraries Archives</i> pp. 1-131, May 1990, archived 8/14/90		
CU	C4	Brooks et al., "Hand Controllers for Teleoperation - A State-of-the-Art Technology Survey and Evaluation," <i>JPL Publication 85-11</i> , NASA-CR-175890; N85-28559, pp. 1-84, 03/1/1985		
CU	C5	Jones et al., "A perceptual analysis of stiffness," ISSN 0014-4819 Springer International (Springer-Verlag); <i>Experimental Brain Research</i> , Vol. 79, No. 1, pp. 150-156, 1990		
	C6	Burdea et al., "Distributed Virtual Force Feedback, Lecture Notes for Workshop on Force Display in Virtual Environments and its Application to Robotic Teleoperation," <i>1993 IEEE International Conference on Robotics and Automation</i> , pp. 25-44, 05/02/1993		
	C7	Snow et al., "Model-X Force-Reflecting-Hand-Controller," NT Control No. NPO-17851; JPL Case No. 7348, pp. 1-4 with 45 pages of attachments, 06/15/1989		
	C8	Ouh-Young, "Force Display in Molecular Docking," Doctoral Dissertation, University of North Carolina at Chapel Hill, UMI Order No. 9034744, p. 1-369, 1990		
	C9	Tadros, "Control System Design for a Three Degree of Freedom Virtual Environment Simulator Using Motor/Brake Pair Actuators," <i>MIT Archive</i> , pp. 1-88, February 1990, archived 8/13/90		
	C10	Caldwell et al., "Enhanced Tactile Feedback (Tele-Taction) Using a Multi-Functional Sensory System," 1050-4729/93, pp. 955-960, 1993		
	C11	Adelstein et al., "Design and Implementation of a Force Reflecting Manipulandum for Manual Control research," DSC-Vol. 42, <i>Advances in Robotics</i> , pp. 1-12, 1992		
	C12	Gotow et al., "Controlled Impedance Test Apparatus for Studying Human Interpretation of Kinesthetic Feedback," WA11-11:00, pp. 332-337		
	C13	Stanley et al., "Computer Simulation of Interacting Dynamic Mechanical Systems Using Distributed Memory Parallel Processors," DSC-Vol. 42, <i>Advances in Robotics</i> , pp. 55-61, ASME 1992		
	C14	Russo, "Controlling Dissipative Magnetic Particle Brakes in Force Reflective Devices," DSC-Vol. 42, <i>Advances in Robotics</i> , pp. 63-70, ASME 1992		
	C15	Kontarinis et al., "Display of High-Frequency Tactile Information to Teleoperators," <i>Telem manipulator Technology and Space Telerobotics</i> , Won S. Kim, Editor, Proc. SPIE Vol. 2057, pp. 40-50, Sep. 7-9, 1993		
	C16	Patrick et al., "Design and Testing of A Non-reactive, Fingertip, Tactile Display for Interaction with Remote Environments," <i>Cooperative Intelligent Robotics in Space</i> , Rui J. deFigueiredo et al, Editor, Proc. SPIE Vol. 1387, pp. 215-222, 1990		

¹ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3).

² For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.

³ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible.

⁴ Applicant is to place a check mark here if English language Translation is attached.



Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known

RECEIVED

SEP 17 2003

Technology Center 2600

Sheet	3	of	3	Application Number	09/912,434
				Filing Date	July 24, 2001
				First Named Inventor	Donald Nelson
				Group Art Unit	2672
				Examiner Name	Chante E. Harrison
				Attorney Docket Number	IMMR058/00US

<input checked="" type="checkbox"/>	C17	Adelstein, "A Virtual Environment System For The Study of Human Arm Tremor," <i>Ph.D. Dissertation</i> , Dept. of Mechanical Engineering, MIT, June 1989, archived 3/13/90	
<input checked="" type="checkbox"/>	C18	Bejczy, "Sensors, Controls, and Man-Machine Interface for Advanced Teleoperation," <i>Science</i> , Vol. 208, No. 4450, pp. 1327-1335, 1980	
<input checked="" type="checkbox"/>	C19	Bejczy et al., "Generalization of Bilateral Force-Reflecting Control of Manipulators," <i>Proceedings Of Fourth CISM-IFTOMM</i> , Sep. 8-12, 1981	
<input checked="" type="checkbox"/>	C20	McAfee et al., "Teleoperator Subsystem/Telerobot Demonstrator: Force Reflecting Hand Controller Equipment Manual," <i>JPL</i> 1988, JPL D-5172	
<input checked="" type="checkbox"/>	C21	Minsky, "Computational Haptics: The Sandpaper System for Synthesizing Texture for a Force-Feedback Display," <i>Ph.D. Dissertation</i> , MIT, June 1995, archived 7/6/95	
<input checked="" type="checkbox"/>	C22	Jacobsen et al., "High Performance, Dextrous Telerobotic Manipulator With Force Reflection," <i>Intervention/ROV '91 Conference & Exposition</i> , Hollywood, Florida, May 21-23, 1991	
<input checked="" type="checkbox"/>	C23	Shimoga, "Finger Force and Touch Feedback Issues in Dexterous Telemanipulation," <i>Proceedings of Fourth Annual Conference on Intelligent Robotic Systems for Space Exploration</i> , Rensselaer Polytechnic Institute, Sep. 30- Oct. 1, 1992	
<input checked="" type="checkbox"/>	C24	IBM Technical Disclosure Bulletin, "Mouse Ball-Actuating Device With Force and Tactile Feedback," Vol. 32, No. 9B, February 1990	
<input checked="" type="checkbox"/>	C25	Terry et al., "Tactile Feedback In A Computer Mouse," <i>Proceedings of Fourteenth Annual Northeast Bioengineering Conference, University of New Hampshire</i> , March 10-11, 1988	
<input checked="" type="checkbox"/>	C26	Howe, "A Force-Reflecting Teleoperated Hand System for the Study of Tactile Sensing in Precision Manipulation," <i>Proceedings of the 1992 IEEE International Conference on Robotics and Automation</i> , Nice, France, May 1992	
<input checked="" type="checkbox"/>	C27	Eberhardt et al., "OMAR - A Haptic display for speech perception by deaf and deaf-blind individuals," <i>IEEE Virtual Reality Annual International Symposium</i> , Seattle, WA, Sep. 18-22, 1993	
<input checked="" type="checkbox"/>	C28	Rabinowitz et al., "Multidimensional tactile displays: Identification of vibratory intensity, frequency, and contractor area," <i>Journal of The Acoustical Society of America</i> , Vol. 82, No. 4, October 1987	
<input checked="" type="checkbox"/>	C29	Bejczy et al., "Kinesthetic Coupling Between Operator and Remote Manipulator," <i>International Computer Technology Conference, The American Society of Mechanical Engineers</i> , San Francisco, CA, August 12-15, 1980	
<input checked="" type="checkbox"/>	C30	Bejczy et al., "A Laboratory Breadboard System For Dual-Arm Teleoperation," <i>SOAR '89 Workshop, JSC</i> , Houston, TX, July 25-27, 1989	
<input checked="" type="checkbox"/>	C31	Ouhyoung et al., "A Low-Cost Force Feedback Joystick and Its Use in PC Video Games," <i>IEEE Transactions on Consumer Electronics</i> , Vol. 41, No. 3, August 1995	
<input checked="" type="checkbox"/>	C32	Marcus, "Touch Feedback in Surgery," <i>Proceedings of Virtual Reality and Medicine The Cutting Edge</i> , Sep. 8-11, 1994	
<input checked="" type="checkbox"/>	C33	Bejczy, et al., "Universal Computer Control System (UCCS) For Space Telerobots," CH2413-3/87/0000/0318501.00 1987 IEEE, 1987	
<input checked="" type="checkbox"/>	C34	SCANNELL, "Taking a Joystick Ride," <i>Computer Currents</i> , Boston Edition, Vol. 9, No. 11, November 1994.	
<input checked="" type="checkbox"/>	C35	"Component Maintenance Manual With Illustrated Parts List, Coaxial Control Shaker Part No. C-25502," Safe Flight Instrument Corporation, Revised 28 January 2002 (3 pages).	
<input checked="" type="checkbox"/>	C36	"Technical Manual Overhaul Instructions With Parts Breakdown, Coaxial Control Shaker Part No. C-25502," Safe Flight Instrument Corporation, Revised 15 July 1980 (23 pages).	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

181505 v1/RE
3W1T01!!DOC

¹ Unique citation designation number.

² Applicant is to place a check mark here if English language Translation attached.



Please type a plus sign (+) inside this box →



PTO/SB/08A (08-00)

Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(use as many sheets as necessary)</i>			<i>Complete if Known</i> RECEIVED SEP 17 2003 Technology Center 2600		
			Application Number	09/912,434	
			Filing Date	July 24, 2001	
			First Named Inventor	Donald Nelson	
			Group Art Unit	2672	
			Examiner Name	Chante E. Harrison	
			Attorney Docket Number	IMMR058/00US	
Sheet	1	of	2		

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY
		Number	Kind Code ² (if known)		
CA		6,104,379		Petrich et al.	08-2000
		5,563,632		Roberts	- 10-1996
		4,542,291		Zimmerman	09-17-1985
		4,988,981		Zimmerman et al.	01-29-1991
		5,184,009		Wright et al.	02-02-1993
		5,184,319		Kramer	02-02-1993
		5,298,890		Kanamaru et al.	03-29-1994
		5,354,162		Burdea et al.	10-11-1994
		5,625,576		Massie et al.	04-29-1997
		5,694,013		Stewart et al.	12-02-1997
		5,790,108		Salcudean et al.	08-04-1998
		5,802,353		Avila et al.	09-01-1998
		5,825,308		Rosenberg	10-20-1998
		5,844,392		Peurach et al.	12-01-1998
		5,877,748		Redlich	03-02-1999
		5,912,658		Bergamasco et al.	06-15-1999
		5,973,678		Stewart et al.	10-26-1999
		5,986,643		Harvill et al.	11-16-1999
		6,028,593		Rosenberg et al.	02-22-2000
		6,111,577		Zilles et al.	08-29-2000
	6,131,097		Peurach et al.	10-10-2000	

¹ Unique citation designation number.

² See attached Kinds of U.S. Patent Documents.



INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Complete if Known			
		Application Number	09/912,434		
		Filing Date	July 24, 2001		
		First Named Inventor	Donald Nelson		
		Group Art Unit	2672		
Examiner Name	Chante E. Harrison	RECEIVED SEP 17 2003			
Attorney Docket Number	IMMR058/00US				
Sheet	2	of	2	Technology Center 2600	

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
CA		P. Coiffet et al., "The LRP Dextrous Hand Master," <i>VR Systems Fall 1993 Conference</i> , Sig Advanced Applications, New York City, October 1993.	
		D. H. Gomez et al., "Integration of the Rutgers Master II in a Virtual Reality Simulation" <i>1995 IEEE Virtual Reality Annual International Symposium</i> , pp. 198-202, San Francisco, CA, 1995.	
		G. R. Luecke et al., "An Exoskeleton Manipulator for Application of Electro-Magnetic Virtual Forces," <i>Proceedings of the 1996 ASME Dynamics Systems and Control Division</i> , pp. 489-494, Atlanta, GA, November 17-22, 1996.	
		L. Rosenberg, "A Force Feedback Programming Primer – For PC Gaming Peripherals Supporting I-Force 2.0 and Direct X 5.0, San Jose, CA, 1997.	
		SensAble Technologies, "GHOST Software Developer's Toolkit – Programmer's Guide Version 1.1," Cambridge, MA 1996.	
		T. V. Thompson II et al., "Maneuverable Nurbs Models within a Haptic Virtual Environment," <i>Proceedings of the 1997 ASME Dynamics Systems and Control Division</i> , pp. 37-44, Dallas, TX, November 16-21, 1997.	
		H. Noma et al., "Cooperative Object Manipulation in Virtual Space Using Virtual Physics," <i>Proceedings of the 1997 ASME Dynamic Systems and Control Division</i> , pp. 101-106, Dallas, TX, November 16-21, 1997.	
		Gardner, Dana L., "The Power Glove," <i>Design News</i> , December 4, 1989, pp. 63-68.	
		Eddy, Andy, "Power Glove: Get a Grip On Your Games," <i>Video Games and Computer Entertainment</i> , September 1989, pp. 18-20.	
		Brooks F., et al., "Project GROPE – Haptic Displays for Scientific Visualization," <i>Computer Graphics</i> , Vol. 24, No. 4, 1990, pp. 177-185.	
		Hirota, Koichi et al., "Development of Surface Display," <i>IEEE 0-7803-1363-1</i> , 1993, pp. 256-262.	
		Rosenberg, Louis B., "Perceptual Design of a Virtual Rigid Surface Contact," Center for Design Research Stanford University, Air Force Material Command, April 1993, pp. 1-41.	
		Colgate, J. et al., "Implementation of Stiff Virtual Walls in Force-Reflecting Interfaces," Sept. 22, 1993.	
		Kelley, A.J. et al., "MagicMouse: Tactile and Kinesthetic Feedback in the Human-Computer Interface using an Electromagnetically Actuated Input/Output Device," Dept. of Elec. Engineering, Univ. of British Columbia, 1993, pp. 1-27.	
		Rosenberg L. et al., "Perceptual Decomposition of Virtual Haptic Surfaces," <i>Proceedings IEE Symposium on Research Frontiers in Virtual Reality</i> , Oct. 1993.	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

181562 v1/RE
3W3#011.DOC

¹ Unique citation designation number.

² Applicant is to place a check mark here if English language Translation attached.